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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,982	05/25/2006	Shuichi Fujii	81872.0113	6452
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DLA PIPER US LLP 1999 AVENUE OF THE STARS SUITE 400 LOS ANGELES, CA 90067-6023			EXAMINER BERDICHEVSKY, MIRIAM	
			ART UNIT 1723	PAPER NUMBER
			NOTIFICATION DATE 01/21/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/580,982	Applicant(s) FUJII ET AL.	
	Examiner MIRIAM BERDICHEVSKY	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

Claims 1-9 are canceled. Claims 27-35 are new. Claims 27-35 are currently pending.

Status of Rejections

1. All rejections from the previous office action are moot as drawn to canceled claims.
2. New claims required new grounds of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 35 requires that "the second region be positioned such that the first region is interposed therebetween..." but is silent to what the first region is between. Clarification is required. Based on the figures of the instant claimed invention and in an effort to expedite prosecution the claim is interpreted as the first region being in the center of the bus bar portions of the second region.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 27-30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori (US 6265242) and Lindmayer (US 4057439).

As to claim 27, Aoyama teaches a solar cell module comprising: a first solar cell having front and rear surfaces, a first bus bar on the front surface having a longitudinal direction (2), an inner lead for electrically connecting the first bus bar to a second bus bar of a second solar cell, wherein in a plan view the bus bar is wider than the lead such that there exists a first region of the bus bar connected to the lead and a second region including an edge portion parallel to the longitudinal direction that is nearer the edge than the first region (figure 6). Aoyama is silent to the particulars of the rear solar cell surface and therefore specifically a second bus bar on the rear surface, the second solar cell to which the lead is connected and a filler sealing the bus bars and lead.

Komori teaches a first solar cell with a bus bar on the light receiving side connected serially to the bus bar of a second solar cell located on the non-light receiving side (figure 7B). Lindmayer teaches encapsulating serially connected solar cells for their protection from ambient conditions (claim 1 and figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the

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second bus bar on the rear surface of Komori in Aoyama in order to collect current and couple solar cells in series for increased voltage wherein adverse affects due to variations are minimized to increase production output as taught by Komori (col. 4, lines 40-60). One of ordinary skill would have found it obvious to encapsulate the cells of modified Aoyama with filler in order to protect the cells from ambient conditions as taught by Lindmayer. The Examiner notes that modified Aoyama reads on the instant claimed invention because modified Aoyama will have the second region in direct contact with the filler.

Regarding claim 28, modified Aoyama teaches that the inner lead has solder at its center portion in the width (figure 2A).

Regarding claim 29, modified Aoyama teaches a plurality of finger electrodes (205) connected to the bus bar on the light receiving surface (Komori: figures 5A-B).

Regarding claim 30, modified Aoyama teaches that the finger electrodes are in contact with filler over their whole length (Aoyama: figure 2B; solder does not run from lead).

Regarding claim 35, modified Aoyama teaches that the second region is positioned on either side of the first region such that the first region is in the center from a plan view (Aoyama: figure 6).

6. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama, Komori and Lindmayer as applied to claim 4 above and further in view of Okada (JP 2000332272).

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Regarding claims 31-32, modified Aoyama is silent to the finger electrodes having a coating (claim 31) made of solder resist (claim 32). Okada teaches a method of making a solar cell that uses a solder resist on a portion of the electrode to minimize forming solder bridges (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the solder resist on the finger electrodes at the juncture with the bus bar to further prevent solder bridges between finger electrodes, as taught by Okada ([0005]).

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama, Komori and Lindmayer as applied to claim 27 above and further in view of Tanaka (US 20020148499).

Regarding claim 33, modified Komori is silent to the solder specifically containing bismuth. Tanaka teaches a solar cell string which uses a lead free bismuth containing solder ([0019]) because lead is harmful ([0013]). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the solder of Tanaka in modified Aoyama because the solder is a known material used for the same intended purpose and solving the same problem, lead free making it safe for the environment, as taught by Tanaka ([0013]) (MPEP 2144).

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama, Komori and Lindmayer as applied to claim 27, above and further in view of Lally (US 6198207) and Kujas (US 4685604).

Regarding claim 34, modified Aoyama teaches using a Sn based solder (table 2) but is silent to the solder having a sum of contraction (shrinkage) coefficients by weight

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percent less than 2.8%. Lally teaches a solder composition for an electronic device which has Sn and a shrinkage coefficient of 0.3% which reduces the residual stresses after solidification of the solder (col. 5, lines 44-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the low shrink solder of Lally in modified Aoyama because the low shrinkage property reduces residual stresses, as taught by Lally (col. 5, lines 55-60) especially in light of the fact that the solar art has recognized the same problem: severe expansion and contraction of solder joints to promote stress and failure, as taught by Kujas (col. 1, lines 10-20).

Response to Arguments

14. Applicant's arguments with respect to claims 1-9 have been considered but are moot as drawn to canceled claims. New ground of rejection is presented for the newly added claims.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MIRIAM BERDICHEVSKY** whose telephone number is (571)270-5256. The examiner can normally be reached on M-Th, 10am-8pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./
Examiner, Art Unit 1723

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1723